Properties of the Spin-flip Amplitude of hadron elastic scattering and possible polarization effects at RHIC

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With relation to the RHIC spin program we research the polarization effects in elastic proton-proton scattering at small momentum transfer and in the diffraction dip region. The calculations take into account the Coulomb-hadron interference effects including the additional Coulomb-hadron phase. In particular we show the impact of the form of the hadron potential at large distances on the behavior of the hadron spin-flip amplitude at small angles. The t-dependence of the spin-flip amplitude of high energy hadron elastic scattering is analyzed under different assumptions on the hadron interaction. This effect can explain the form of the differential cross section and the analyzing power at small transfer momenta. The methods for the definition of the spin-dependent part of the hadron scattering amplitude are presented. A possibility to investigate the structure of the hadron spin-flip amplitude from the accurate measure of the differential cross section and the spin correlation parameters is shown.